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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,433	12/27/2001	Satoshi Arakawa	Q66574	1567

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EXAMINER

MACKOWEY, ANTHONY M

ART UNIT PAPER NUMBER

2623

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/026,433	Applicant(s) ARAKAWA, SATOSHI	
	Examiner Anthony Mackowey	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/27/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/27/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4/1-2, 5-7, and 9/5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,210,415 to Ito.

As to claim 1, Ito discloses a radiation image signal processing method (col. 1, lines 7-10), comprising the steps of:

- i) performing image position correcting processing for correcting a low energy image signal and/or a high energy image signal, such that a position of an image, which is represented by the low energy image signal (SO_1), and a position of an image, which is represented by the high energy image signal (SO_2) coincide with each other, a pair of corrected original image signals being thereby obtained (col. 8, lines 29-37, Ito discloses position adjustment processing is carried out such that the positions of the X-ray images coincide with each other.).
- ii) performing first energy subtraction processing on the pair of the corrected original image signals (col. 9, lines 10-26, Ito discloses an energy subtraction process in which the resulting image signal represents soft tissue.), and
- iii) performing second energy subtraction processing with respect to the low energy image signal and the high energy image signal (col. 10, lines 19-23, Ito discloses generating an

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image signal representing bone using the same method with different parameters (weighting values).),

wherein the second energy subtraction processing is performed by the utilization of the pair of the corrected original image signals, which have been obtained at the time of the first energy subtraction (col. 9, lines 10-19, Ito discloses the subtraction process is carried out on the first and second image signals, specifically that components of the weighted signals are subtracted from each other which represent the image information stored at corresponding picture elements in the two images. This indicates the two position corrected original image signals have been stored for use in the subtraction process.)

Ito performs the position correcting process prior to the energy subtraction step in the first energy subtraction process, thus these corrected image signals would be saved in memory, as the process is computer based, and these saved image signals would be available for both the first and second energy subtraction processes.

As to claim 2, Ito further discloses the pair of the corrected original image signals, which have been obtained at the time of the first energy subtraction processing, are stored (col. 9, lines 10-19, Ito discloses the subtraction process is carried out on the first and second image signals, specifically that components of the weighted signals are subtracted from each other which represent the image information stored at corresponding picture elements in the two images. This indicates the two position corrected original image signals have been stored for use in the subtraction process.), and

the second energy subtraction processing is performed by the utilization of the pair of the corrected original image signals, which have thus been stored.

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As stated above, the corrected image signals have been stored, thus they would be available for the second energy subtraction process.

As to claim 4/1-2, Ito further discloses the image position correcting processing is performed on only the high energy signal (col. 8, lines 40-44, The reference in essence allows either one to be corrected with respect to the other signal, thus meeting the limitation.).

As to claim 5, Ito discloses a radiation image signal processing apparatus (col. 1, lines 10-11). As to the remainder of the claim arguments analogous to those presented in claim 1 are applicable to claim 5.

As to claim 6, Ito discloses the apparatus comprises:

- a) common energy subtraction processing means for performing the first energy subtraction processing and the second energy subtraction processing (col. 7, lines 67-68, Ito teaches the main body of the apparatus incorporates a CPU.),
- b) storage means for storing the pair of the corrected original image signals, which have been obtained at the time of the first energy subtraction processing (col. 7, lines 65-68, Ito teaches the apparatus includes a floppy disk drive unit serving as an auxiliary storage medium as well as internal memory.),
- c) instruction means for outputting an instruction for performing the second energy subtraction processing, and
- d) control means for controlling the common energy subtraction processing means in accordance with the instruction, which has been outputted from the instruction means, such that the common energy subtraction processing means performs the second energy subtraction

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processing by the utilization of the pair of the corrected original image signals, which have been stored in the storage means.

With regard to c and d the process is performed by a computer with a CPU, memory and a floppy disk drive as discussed above and it would be inherent that the computer would have instructions for performing the second energy subtraction process stored in memory with the CPU controlling the common energy subtraction processing.

As to claim 7, arguments analogous to those presented for claim 6 above are applicable to claim 7. From the claim language it is not clear whether the second energy subtraction process is to be performed by a separate/different processing means, therefore it has been interpreted as the same processing means being capable of performing both first and second energy subtraction processing.

As to claim 9/5-7, arguments analogous to those presented above for claim 4/1-2 above are applicable to claim 9/5-7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4/3, 8, and 9/8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,210,415 to Ito in view of the book PACS: Basic Principles and Application by H.K. Huang, D.Sc. (Huang).

As to claim 3, Ito discloses all the limitations of claim 1, but does not disclose the method wherein the pair of correct original image signals, which have been obtained at the time of the first energy subtraction processing, are transferred to a certain destination, and

the second energy subtraction processing is performed at the transfer destination by the utilization of the pair of the corrected original image signals, which have thus been transferred.

Huang teaches a picture archiving and communication system (PACS) including a PACS Controller and Archive capable of receiving images from acquisition computers as well as archive retrieval requests from workstations (p.178, paragraph 7.1.2; p.179, Table 7). Images are transferred from the acquisition computers to the database server and archive system where they are stored until a request is received from a workstation, at which time the stored images are transferred to the workstation for viewing or processing. In essence, images obtained by a computer performing the first processing method can be transferred (via the

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database server and archive system) to another computer where a second processing method can be performed utilizing the transferred images.

The teachings of Ito and Huang are combinable because PACS networks are commonly used in the medical area to store and share medical data. It would have been obvious to one of ordinary skill at the time the invention was made to have a computers performing the method and corrected original images as taught by Ito be part of a PACS network as taught by Huang.

One would have been motivated to do so because the corrected original images of a patient obtained by a doctor performing the first energy processing (i.e. one concerned with the patients heart or lungs) would be accessible to another doctor performing the second energy subtraction process (i.e. one concerned with the patients rib cage) without the need to perform the X-ray procedure again. Thus saving time and avoiding exposing the patient to additional X-rays.

As to claim 8, arguments analogous to those presented in claim 6 above are applicable to claim 8, however Ito is silent with regard to the control means for transferring the pair of corrected original image signals. As to the control means, arguments analogous to those presented in claim 3 above are also applicable to claim 8.

As to claims 4/3 and 9/8 arguments analogous to those presented above for claim 4/1-2 above are applicable to claim 4/3.

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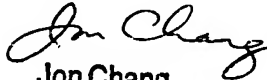
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Mackowey whose telephone number is (703) 306-4086. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AM
1/21/2005


Jon Chang
Primary Examiner